Short-term beneficial effects of physiotherapy exercise after knee arthroplasty for osteoarthritis

Synopsis

Summary of: Minns Lowe CJ, Barker KL, Dewey M, Sackley CM (2007) Effectiveness of physiotherapy exercise after knee arthroplasty for osteoarthritis: systematic review and meta-analysis of randomised controlled trials. *BMJ* 335: 812–820. [Prepared by Gro Jamtvedt and Kåre Birger Hagen, CAP Editors.]

Question: What are the effects of physiotherapy exercise for patients with osteoarthritis after elective primary unilateral total knee arthroplasty? ***Data Sources***: AMED, CINAHL, EMBASE, King's Fund, Medline, Cochrane library, PEDro, and the UK Department of Health national research register, searched up to April 2007. This search was supplemented by handsearching a small number of journals and conference abstracts, as well as scanning the reference lists from relevant articles identified by the search. ***Study selection***: Randomised controlled trials involving patients undergoing elective total knee arthroplasty for osteoarthritis in which organised physiotherapy after discharge from hospital was compared to standard post-discharge management. Outcome measures were function, range of motion, muscle strength, walking speed, and quality of life. ***Data extraction***: Two reviewers (masked to the key details of the papers) independently assessed methodological quality on a checklist developed from the CONSORT statement and the Critical Appraisal Skills Programme guidelines and extracted the data. ***Results***: Six trials with a total of 614 patients were identified, of which five trials with a total of 554 patients provided data that could be included in the meta-analyses. Trial quality was good overall. The trials compared additional physiotherapy exercises or treatment after discharge with no organised outpatient physiotherapy. The patients in the control groups were expected to continue with traditional home exercise programs: isometric strengthening, range of movement exercises, and gait training. Based on quantitative pooling of three trials at 3 to 4 months follow up, there were statistically significant differences in favour of physiotherapy exercises for function (standardised effect size 0.33, 95% CI 0.07 to 0.58) and range of motion (weighted mean difference 3 degrees, 95% CI 1 to 5). At the same time point, results from two trials indicated no significant difference in quality of life (weighted mean difference 1.7 points, 95% CI –1 to 4.3) or walking speed (standardised effect size 0.27 (95% CI –0.13 to 0.67). None of the trials measured muscle strength. At one year follow up, there were no statistically significant differences in any outcome. ***Conclusion***: Additional physiotherapy exercises or treatment after discharge have small to moderate short-term beneficial effects compared to no organised outpatient physiotherapy.

Commentary

Both inpatient and outpatient physiotherapy interventions are used after knee arthroplasty, but their effectiveness is questioned. The duration and intensity of the rehabilitation programs also vary considerably (Roos 2003). Discharge from physiotherapy typically occurs when impairments in range of motion and pain resolve, while criteria such as quadriceps muscle strength or performance-based disability measures are rarely used.

This well-performed systematic review provides evidence for health care practitioners, patients, and health policy makers to make decisions concerning interventions following knee arthroplasty. The included studies are all randomised controlled trials in an important and homogenous patient group. In contrast to some systematic reviews that include a broad range of interventions, this review has included only those trials that examine active rehabilitation interventions that are clinically relevant: exercise programs based on functional activities. Furthermore, the review has considered clinically relevant and valid outcome measurements that are based on function, such as the Western Ontario and McMaster Universities Osteoarthritis (WOMAC) Index, the 6-Minute Walk Test and the SF-36.

However, one topic is omitted: data regarding compliance (adherence). Have any of the included randomised controlled trials included information regarding compliance? Compliance to rehabilitation programs is of great importance in determining their effectiveness. The duration in weeks or months of the physiotherapy programs are stated, but the amount of training each patient performed is not described in the included trials.

This systematic review provides evidence of short-term benefit from exercise programs based on functional activities after discharge after total knee arthroplasty. There was no evidence for a long-term benefit of the functional exercise programs. From both clinical and socioeconomic points of view, a short-term benefit is of great significance, although the cost effectiveness both for short- and long-term outcomes needs further study.

Further evidence of an intensive outpatient program immediately after hospital discharge may also strengthen the basis for a reduction in length of hospital stay. A new randomised controlled trial of the effectiveness of an intensive exercise program immediately after hospital has recently been published (Bulthuis 2007), and new studies examining the cost effectiveness of such programs should be done.

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References

Roos EM (2003) *Curr Opin Rheumatol* 15: 160–162.

Bulthuis Y et al (2007) *Rheumatology* 11: 1712–1717.